

## Claims:

1. A process for producing an olefin oxide, which comprises reacting an olefin with oxygen in the presence of a silver catalyst and 0.2 mole or more of water per mol of the olefin.
- 5 2. A process according to claim 1, wherein the silver catalyst is a silver-containing composition obtained by contacting silver metal or a silver compound or a mixture thereof with
  - (A) at least one selected from the group consisting of an inorganic solid oxide and a metal carbonate, and optionally
  - 10 (B) at least one selected from the group consisting of an acid and a nitrogen-containing compound.
3. A process according to claim 2, wherein the inorganic solid oxide is
  - a) silicon oxides, b) alumina, calcia, magnesia, titania or zirconia, or complex metal oxides thereof.
- 15 4. A process according to claim 1, wherein the reaction of the olefin with oxygen in the presence of a silver catalyst and 0.2 mole or more of water per mol of the olefin is conducted at a pressure range of 0.01 to 1 MPa absolute.
5. A process according to claim 1, wherein the amount of water is 0.2 mole to 20 moles per mol of the olefin.
- 20 6. A process according to claim 1, wherein the silver catalyst is a silver catalyst containing silver 1 % to 70% by weight.
7. A process according to claim 1 or 2, wherein the silver catalyst is a silver-containing composition obtained by calcining the silver-containing composition as defined in claim 2.
- 25 8. A process according to claim 1, wherein the silver metal is a silver metal obtained by reacting the silver compound with a reducing agent.
9. A process according to claim 3, wherein the silicon oxide is water-insoluble silicate or silica gel.
10. A process according to claim 9, wherein the water-insoluble silicate is

zeolite or mesoporous silicate.

11. A process according to claim 2, wherein the metal carbonate is alkaline earth metal carbonate.

12. A process according to claim 1, wherein the olefin is propylene and  
5 the olefin oxide is propylene oxide.